

Summaries

UDC 51-7(519.21,519.216,519.217)

D.N. Zhabin, E.S. Kholopova**LINEAR SYSTEM UNDER THE INFLUENCE OF ACCIDENTAL SLOWLY CHANGING IMPULSES**

Arbitrary linear system under the influence of external chaotic impulses is considered. It is suggested that the external pulse transmission to the system is described by some quadratically integrated function. It is shown that suggested assumptions imply correct definition of a stochastic integral.

UDC 530.12:531.51

V.V. Lasukov**GRAVITATION ANALOGUE OF STATISTICAL MECHANICS**

Connection of relativistic thermodynamics of the early Universe with Logunov metrics and gravitation analogue of statistical dynamics is investigated. It is determined that time invertible Liouville equation can have a particular solution with a broken time symmetry.

UDC 553.411

A.F. Korobeinikov**FORMATION CONDITIONS OF MAJOR AND GIANT GOLD FIELDS**

Regulations on major and giant endogen gold fields (and complex gold and platinum objects) in active phenomena of plume tectonics, paleodiapirism, riftogenesis, mantle and crustal metasomatism are established. It is shown that intra-mantle metasomatism leads to redistribution and production of noble metals from deep-seated dunites and peridotites subject to volumetrical amphibolization under the influence of heated fluids. Intra-mantle magma and thermal fluids dynamic noble metals bearing systems provided the formation of major and giant ore objects in the earth's crust. In the absence of penetration features of deep-seated fluxes and thermal fluids flows into the crustal ore localization areas only fields with poor and average content of metals can be formed.

UDC 553.411.071

I.V. Kucherenko**SAMPLING FORMATION DURING THE CALCULATION OF STATISTIC PARAMETERS OF CHEMICAL ELEMENTS DISTRIBUTION AND BALANCE IN THE WALL ROCK AREA OF HYDROTHERMAL GOLD DEPOSITS**

The paper reveals contradictory opinions concerning the estimation of abnormal gold concentrations in wall rock area of gold fields located in hydrocarbon shale formations and methods of their avoidance. The major attention is drawn to the necessity of geochemical samples formation taking into account the content and origin of parental rocks, metamorphic and metasomatic zone sequence. This provides the opportunity to reconstruct the geochemical metal history in wall rock area, create unified formation system of geochemical database at both regional and global levels, and solutions to other complicated tasks. The efficiency of suggested formation principles of geochemical samples is shown using the example of ore-hosting shale part of Northern Transbaikalia Karalonsky ore field. In particular, the formation of wall rock geochemical envelope with low (near-clarke) gold content and a number of its accompanying metals in a parental sedimentary rock of sandy silt size, subject to regional greenschist facies metamorphism, is proved. Conclusions concerning external sources of ore and aureole gold and other metals are made.

UDC 553.311

V.G. Voroshilov**FORMATION MECHANISM OF ABNORMAL STRUCTURES OF GEOCHEMICAL FIELDS OF HYDROTHERMAL GOLD DEPOSITS**

Existing concepts of zoning sequence appearance in hydrothermal ore and metasomatic systems are considered. The major attention is drawn to controversial physical and hydrodynamic aspects of their formation. The author's opinion on the formation mechanism of zoning abnormal structures of geochemical fields is presented. Origin and functioning hypothesis of hydrosulphuric barrier in hydrothermal deposits is suggested.

UDC 553.493.5:550.4(571.15)

A.A. Potseluev, D.I. Babkin, V.I. Kotegov**COMPOSITION AND PECULIARITIES OF GAS DISTRIBUTION IN QUARTZES OF KALGUTINSKOYE RARE-METAL FIELD**

Basic components of gas-liquid inclusions in quartzes of ore-bearing geological formations of Kalgutinskoye rare-metal field are investigated, among which there is H₂O, CO₂, CO, H₂, as well as saturated (CH₄, C₂H₆, C₃H₈, C₄H₁₀, C₅H₁₂, C₆H₁₄) and unsaturated hydrocarbons (C₂H₂, C₂H₄). H₂O and CO₂ are major inclusion components. There is a domineering number of two-phase inclusions, while one- and three-phase inclusions are rarely identified. Homogenization temperature of primary inclusions is 290...340°C, and 140...160 °C in secondary ones. The concentration of saline solutions (NaCl) in the content of two-phase authigenic inclusions amounts to 11,6...14,0 mass per cent. Ore-bearing field formations strongly differ in general gas content. Common peculiarities of zoning distribution of components are determined. H₂O and CO₂ content decreases with depth but the content of CO, H₂ and hydrocarbons increases; concentration of carbon dioxide and hydrocarbons in fluid content increases. Regular formation of earlier defined graphite due to carbon yield from a fluid is shown. The conclusions concerning mineralization in contrast oxidation conditions of primary restored metal-bearing fluid are made.

UDC 553.985:550.4

V.R. Antipenko, O.A. Golubina, I.V. Goncharov, S.V. Nosova**THE NATURE OF IVANOVSKIY ASPHALTITE OCCURRING IN ORENBURG REGION**

Elemental, functional and group compositions of the asphaltite recovered from Ivanovskiy field, as well as molecular compositions of hydrocarbon and heteroatomic components in asphaltite oil fraction are studied. The results obtained allow one to conclude that crude oil generated at earlier stages of catagenesis by marine carbonate or marine/mixed carbonate, deposited in anoxic/sulphide environment is the source material for the formation of asphaltite deposit. Early diagenesis of the sediment proceeded under highly reduced conditions. Amides of saturated and unsaturated acids are identified in native bitumen composition for the first time.

UDC 624.131.4

K.I. Kuzevanov, N.G. Nalivaiko, E.M. Dutova, D.S. Pokrovsky**CHEMICAL AND MICROBIOLOGICAL COMPOSITION OF STREAM WATERS IN TOMSK URBAN TERRITORY**

Chemical and microbiological compositions of shallow waters under the influence of industrial wastes are considered as ecological indicators of the territory. Sampling plan of water passageways is developed based on urban territory regionalization under the conditions of surface run off. Comparative evaluation of local run off basins is given in accordance with conditions and level of industrial pollution.

UDC 550.42:577.4(571.1)

O.G. Savichev

**CONDITIONS OF IONIC RUNOFF FORMATION
IN MIDDLE OB RIVER BASIN**

Conditions of ionic runoff formation in middle Ob river basin are considered. The paper presents generalized qualitative data on mean annual values of main ions entering the surface waters from atmospheric air, bogs, together with wastewaters and upper Ob waters, and as a result of water-rock interactions. It is shown that the largest part of ionic runoff in middle Ob river basin is formed due to the influence of natural factors.

UDC 621.376.2:621.372.8

S.M. Slobodyan

**OPTIMIZATION OF SCANNING DEVICE OPERATION
OF IMAGE OVERLAPPING OBJECTS**

Detection of optically observed closely connected objects with image overlapping is examined. The paper presents the analysis using the example of pulse modulation sources of optical signal. Optimal scanning and modulation parameters are defined. Qualitative estimation of statistical division possibilities of one image against the other is given.

UDC 620.179.19 612.76

V.N. Ilyushenov, V.P. Vavilov, V.V. Shiryayev, A.V. Ilyushenov

**INFRARED THERMOGRAPHY ANALYSIS OF DYNAMIC
TEMPERATURE FIELDS IN HUMAN BONES AFTER
INSTALLATION OF METALLIC HOLDER COOLED DOWN
TO LIQUID NITROGEN TEMPERATURE**

Infrared thermography is applied to the analysis of dynamic temperature distributions that appear in human bones after installation of metallic holder cooled down to the liquid nitrogen temperature. It is shown that damping couplings reduce not only mechanical stresses in bones but also a "cold shock" produced by holders.

UDC 537.226

A.V. Malyshev, V.V. Peshev, A.P. Surzhikov

**FERROELECTRIC BEHAVIOUR
OF POLYCRYSTAL FERRITE CERAMICS**

It is shown that polycrystal lithium-titanium ferrite has ferroelectric properties expressed by both abnormalities of dielectric characteristics peculiar to ferroelectric materials and such properties that regard the considered material as a ferroelectric one using hysteresis loops and pulse registration of a repolarization current (Barkhausen pulses).

UDC 621.315.592

V.V. Peshev

**INFLUENCE OF NON-HOMOGENEOUS ELECTRICAL
FIELDS ON DLTS SPECTRA IN NEUTRON-IRRADIATED
SEMICONDUCTORS**

The expression for DLTS spectra in semiconductors containing inner electric fields is obtained. With the use of this expression, an attempt is made to connect the U-band origin in DLTS spectra of a neutron-irradiated n-GaAs with well-known P2 and P3 defects within disordered regions. Shape and temperature position of P2 and P3 peaks in DLTS spectra are supposed to change due to disordered regions electric field influence on electron rates during emission from these traps. The numerical calculations of DLTS spectra for P2 and P3 centers are fulfilled and satisfactory agreement with the experimental data is observed.

UDC 537.533.2

E.P. Surovoy, I.V. Titov, L.N. Bugerko

**CONTACT POTENTIAL DIFFERENCE FOR LEAD,
SILVER AND THALLIUM AZIDES**

Contact potential difference between metals, semiconductors, lead, silver and thallium azides (of different synthesis methods) and platinum reference electrode in a wide range of pressures

($1.3 \cdot 10^5 \dots 1 \cdot 10^{-5}$ Pa) and temperatures (290...400 K) is measured. Values of surface potentials are spotted. It is found that changes in contact potentials difference which are observed under decrease in pressure and increase in temperature of preliminary thermal treatment occur due to desorption of donor gas molecules from the surface of lead azide and due to desorption of acceptor gas molecules of silver and thallium azides and, as a result, due to the reduction of the surface potential to the minimum value. It is shown, that solid products of photolysis and thermolysis of azides are metals.

UDC 621.373.826.004:662.3

V.V. Medvedev, V.P. Tsipilev, A.A. Reshetov

**IGNITION OF PYROTECHNIC COMPOUND
(AMMONIUM PERCHLORATE + ULTRADISPERSED
ALUMINUM) BY LASER PULSES IN MILLISECOND
AND NANOSECOND RANGE DURATION**

The paper presents experimental results on ignition of pyrotechnic compound (ammonium perchlorate + ultradispersed aluminum) by laser radiation ($\lambda=1.06$ microns) with different duration of laser pulses ($\tau=4$ ms; 2 ms; 0.8 ms; 80 mcs; 30 ns). Threshold values and delays of ignition are measured. One of possible mechanisms of laser ignition of the compound studied is suggested.

UDC 621.039.532.21

**V.I. Boiko, P.M. Gavrilov, M.G. Gerasim,
A.G. Kokhomsky, V.N. Mescheryakov,
V.N. Nesterov, A.V. Ratman, I.V. Shamanin**

**INFLUENCE OF NON-UNIFORMITY OF CURRENT DENSITY
OF DAMAGING NEUTRONS ON WORKING LIFE
OF REACTOR GRAPHITE**

Using the example of RBMK-1000, the lifetime of the reactor graphite is determined with the account to non-uniformity of energy output, the radius and the height of the active zone and the radius of the graphite block. The method of processing arrays of operation parameters of the industrial uranium-graphite reactor, the method of distribution of bulk density of heat emission with the account to radial and axial profiling of the active zone and the method of distribution of the lifetime value along the active zone and the graphite block are suggested.

UDC 530.17

K.O. Sabdenov

**SIMULATION OF CHEMICAL AND RADIOACTIVE
POLLUTION OF THE EARTH SURFACE DURING TESTING
OF HIGH -ENERGY DEVICES**

Based on the previously elaborated model of admixture falling out of the cloud in stably stratified atmosphere, the pollution level of earth surface by chemical substances during testing of solid fuel rockets and by radionuclides during explosion of nuclear charges is calculated. The qualitative comparison of theoretical forecasts with the observation data is carried out. The recommendations concerning further improvement of the method of admixture transfer in stably stratified atmosphere are proposed.

UDC 66.023.2

I.A. Tikhomirov, D.G. Vidyaev, A.A. Grinyuk

**EQUATION OF AMALGAM-EXCHANGE COLUMN
IN STATIONARY OPERATION MODE**

The equation of column for stationary operation mode is described. The conditions are determined, under which enrichment in the column is not observed.

UDC 543.423.541.182

V.I. Otmakhov

**THERMODYNAMIC MODELING OF METHODS OF ATOM-
EMISSION ANALYSIS OF OXIDE INDUSTRIAL WASTES**

Using thermodynamic modeling, high-temperature processes occurring in spectra excitation sources during formation of the analytical

signal are studied. Kinetic aspects conforming the adequacy of thermodynamic calculations are investigated.

UDC 541.66

V.I. Kosintsev, M.A. Samborskaya, E.A. Laktionova

**MATHEMATIC SIMULATION
OF RAW FORMALIN RECTIFICATION**

The mathematical model of raw formalin purification accompanied by chemical reactions is designed. The model allows to perform numerical analysis of efficiency of components separation under different operational conditions in a mass-transfer column and at changing raw formalin composition. The difference in the schemes of reactions of formic aldehyde with water and methanol is revealed. The algorithm of recalculation of analytical concentrations of components and consumption rates of production flows into compositions and consumption rates of pseudo-binary flows is offered. The intervals of change of a liquid entrainment between the plates are established under different column spraying modes and the necessity to increase efficiency of the plates is shown.

UDC 543.253

**Yu.A. Karbainov, T.M. Gindullina, G.B. Slepchenko,
E.G. Tscherepemy, D.S. Stukalov**

**ON RESOLUTION CAPACITY OF THE METHOD OF INVERSION
VOLTAMPEROMETRY ON A MERCURY DROP CATHODE
DUE TO SUBSEQUENT CHEMICAL REACTIONS**

Based on the way regularities of the subsequent chemical reaction influence reversible anode peaks on the stationary mercury drop electrode in the inversion voltamperometry method, the new technique for separating reversibly and irreversibly oxidizing metals with close potential values of their anode peaks and the qualitative criterion for assessment of relative error in detecting the sought metal in the presence of the interfering metal are suggested.

UDC 547.443

V.K. Chaikovski, M.S. Yusubov, V.D. Filimonov
SYNTHESIS OF ACENAPHTHENE 1,2-DIKETONES

The approach has been developed to the synthesis of 3,5-di(phenylglioksaloil) acenaphthene through the series of intermediate stages, including acylation of 5-iodine acenaphthene by phenylacetic acid, oxidation of 5-iodine-3-phenylacenaphthene by the system dimethylsulfoxide HBr up to 3-phenylglioksaloil-5-iodineacenaphthene, condensation of the obtained iodinediketon with phenylacetylene and subsequent oxidation of 3-phenylglioksaloil-5-phenylethynylacenaphthene by the system dimethylsulphoxide PdCl_2 .

UDC 620.178.162:519.87

G.G. Petrov, V.A. Dotsenko, A.V. Lysunets
**INFLUENCE OF THE QUALITY OF OIL PURIFICATION
ON RELIABILITY OF ROAD MACHINES ENGINES**

The mathematical model of abrasive wear of plunger pairs of high pressure fuel pumps taking into account impurity of diesel fuel is developed. The method for assessing efficiency of the purification system of diesel fuel is suggested which may be used for optimization of oil products purification systems.

UDC 539.43

A.A. Maksimenko, S.Ya. Kuranov
**DEVELOPMENT OF THE DESIGN DEPENDENCIES
BETWEEN VOLTAGE AND DEFORMATIONS
IN THE CONDITIONS OF CYCLIC LOADING
AND COMPLEX STRESSES STATE**

On the basis of the structural model of material the calculation technique of small-cyclic deformation diagrams in complex stressed state is developed. It takes into account deformation anisotropy and cyclic instability of the material.

UDC 621.891(048):539.178(048)

N.V. Koteneva

**ELASTICOPLASTIC CONTACT OF SMOOTH SPHERE
WITH FLAT SURFACE DURING THE DYNAMIC LOADING**

Theoretical model of smooth sphere inculcation into elasticoplastic hardenable solid is considered in this paper. Dependences, which describe the behavior of hardenable solid in elasticoplastic area of contact interaction are proposed on the basis of this model. The proposed analytical dependences allow to take into account additional rapprochements of contacting bodies due to the dynamical loading. This makes it possible to more precisely calculate the parameters of solidity and rigidity of the contact while calculating the units of devices and machines, precise equipment, press-fit connections and screw joints, various drives and bearings.

UDC 622.24.05

A.P. Slistin, L.A. Saruev

**MODELING OF THE PROCESS OF STRIKER CONCUSSION
WITH THE SHANK OF THE IMPACT TOOL**

Mathematical model, describing the impact interaction of striker of the alternating cross-section and with the shank of the impact tool is proposed in this paper. Parameters of this interaction are obtained. They are as follows: longitudinal force, particle rate in the material, power flow, and other characteristics, which observe considerable concurrence with experimental data.

UDC 548.4.001:621.791.052.08:620.179.16

A.M. Apasov, A.A. Apasov

**MECHANISMS OF ORIGIN, FORMATION, AND DIAGNOSTICS
LACK OF FUSION IN THE PROCESS OF WELDING. PART 2**

The results of modeling and experimental studies of the processes of origin, formation and development of lack of fusion during welding are presented in this paper. The modeling data allowed to register lack of fusion in real time and to form steering commands to adjust parameters of welding regimes.

UDC 621.791.2

O.G. Brunov

**CONVERTER OF A CONTINUOUS WIRE DELIVERY INTO
THE IMPULSE ONE FOR WELDING IN CO_2**

On the basis of regular mechanism with continuous wire delivery, it is proposed to obtain the mechanism of impulse wire delivery by installing a converter into the welding handle. The problems, arising during the installation of the converter are considered, practical recommendations and calculation formulas are presented.

UDC 620.179.14

A.E. Goldstein, A.R. Svendrovski

**TRANSFORMER TWO-COORDINATE MEASURING
CONVERTER OF LINEAR CONDUCTOR CROSS MOTIONS**

The design of the transformer two-coordinate converter whose main area of application is measurements of concentricity error of electric cable conductor is proposed in this paper. Analytical expression for identification of converter's parameters is suggested. The method of determining optimal geometrical parameters of converter is proposed.

UDC 621.314.632

K.V. Bogdanov

MODELING OF INCREASING IMPULSE VOLTAGE STABILIZER

The major schemes of converters with pulse-duration modulation are considered from the point of view of their analysis and synthesis. The method of modeling these devices with the help of software products Simulink and Mathcad using structural charts is proposed. This method allows to make adjustments of operating speed in all converter designs.

UDC 621.321

V.N. Vasilenko, V.A. Lavrinovich

DRIVE OF MANUAL OPERATIVE INCLUSION OF VACUUM SWITCHES

A new small-sized drive of manual operative inclusion for vacuum switches with effort compress vacuum circuit breakers up to 800 N is developed. The offered manual drive can be used together with a built-in electromagnetic drive. The kinematical circuit, principle of its operation, developed design for the vacuum switcher such as VBSK-10-20/1000 are reflected in this paper.

UDC 621.311

L.V. Krivova, A.V. Shmoilov

INTERDEPENDENCE OF FAILURE RATE OF SWITCHING APPARATUS AND CIRCUIT ELEMENTS OF ELECTRIC CONNECTIONS

The use of interdependence coefficient, which is a standard difference between the conditional and unconditional probability of circuit elements failures relatively to other failures is proposed in this paper in order to take into account the influence of circuit components on the considered object in case of failure.

UDC 621.3

Z.A. Belluyan

INTENSIVE TESTS OF GENERATORS FOR RELIABILITY

A method of choosing regime enhancing parameters and upper ranges of influencing factors is proposed for carrying out intensive tests of reliability of separate parts of synchronous generators. The regression equation of the total work for these parts is obtained.

In accordance with the correlations obtained, the test intensity factors for synchronous generators are determined. The suggested technique may be used for any electrotechnical appliances provided the relevant tests plans are followed.

UDC 621.31-5

V.G. Bukreev, I.Yu. Krasnov

ESTIMATION OF ROBUSTNESS PROPERTY OF CONTROL ALGORITHMS FOR NON-STATIONARY ELECTROMECHANICAL OBJECTS

The synthesis of robustness algorithms of control for non-stationary electromechanical objects is developed; the estimation of their sensitivity is made. The main feature of considered objects of control is their nonstationary character, that brings in basic difficulties into studying the structural properties of object (stability, controllability and observability), and in development of algorithms of estimation and control.

UDC 681.3.07

M.P. Silich, N.Yu. Khabibulina

TOOL SET FOR DESIGNING EXPERT SYSTEMS THAT USE THE FUNCTIONAL RELATIONS MODEL

The tool set "WinESISP" is being described here. It is designed for developing the research prototypes of expert systems in static problem areas. These prototypes use the functional relations model as the form of knowledge representation. This set allows to create some models describing different types of relations between the parameters, which describe subject area (rules-production, analytical formulas, procedures), to accomplish an indistinct logic conclusion using the algorithms of direct and return conclusion to solve the problems of diagnostics, optimal designing, planning and system control.

UDC 612.821.11.35

O.G. Berestneva

MODELING OF THE DEVELOPMENT OF STUDENTS' INTELLECTUAL COMPETENCE

Efficiency of the use of regression models is demonstrated for forecasting students' intellectual competence. Several types of models

are considered in this paper. It is shown that taking into consideration the gender factor increases the quality of prognostic regression model, the introduction of dummy variables into the model being the most effective means.

UDC 658.50

A.B. Pushkarenko

EFFICIENCY ASSESSEMENT BETWEEN SCIENTIFIC AND ENGINEERING PRODUCTION DEVELOPERS AND INDUSTRIAL PARTNERS

The necessity to assess the interaction level between scientific and engineering production developers and industrial partners when presenting mutual innovation project is approved. The areas for this kind of assessment and the assessment criteria of the maturity level between partners in these areas by the moment of project presentation are required.

UDC 553.98

G.Yu. Boyarko

PRECIOUS METALS PRICE MOVEMENT

The results are given on precious metals price movements. Low price flexibility is shown for gold, silver, platinum and palladium during medium-term and long-term periods. When comparing the price of precious metals in different national currencies the absence of relative price growth (in dollars) during the middle-term period after year 2001 is revealed. Negative gold price dependence together with international investments is also displayed.

UDC 111.1:159.953

E.A. Tsubulevskaya, K.A. Ankudinova

MODERNIZATION CONFLICTS AND THE PROBLEM OF POWER LEGITIMACY IN RUSSIAN SOCIAL AND POLITICAL CONTEXT OF TRANSITIONAL PERIOD

The specific character of modernized processes typical of transitional period of Russian society was considered; in the discourse of transitive society the power issue considered from the point of view of Russian social and political life is conceptualized.

UDC 130.2+165.1

V.E. Budenkova

DYNAMIC RATIONALITY IN THE CONTEXT OF MODERN CULTURE AND SCIENCE

In this paper, the new interpretation of rationality is proposed. Traditional normative approach, mostly connected with science, doesn't meet the requirements of modern culture. Problem of rationality must be solved on the basis of the features of reality. One of its peculiarities is communicativeness. Communication is a perpetual dialogue between a man and a world, while rationality is the measure of their mutual accordance. However, the world of modern culture is variable and dynamic; this causes the dynamic nature of rationality. Its main features are communicativeness, self-reflection and situational character. Complementarity manifests itself both in cognition and in reality. It accentuates the ambiguity and dialogical character of cognitive process. As for the self-reflection and situativity, they resist to absolutization of any forms of mind placing the rationality into historical context and making it realize its own limits.

UDC 305:947.083

T.V. Kiselnikova

FROM THE HISTORY OF SOCIALISTIC THOUGHT. INTELLECTUALS OF DIFFERENT RANK IN RUSSIA: A.N. POTRESOV'S POINT OF VIEW

A.N. Potresov was a prominent Social Democrat at the beginning of the 20th century. His point of view on the issue of intellectuals' social role and their attitude to social movement is being analyzed.

UDC 930.1(44)

N.V. Trubnikova**RUSSIAN HISTORICAL STUDIES IN FRANCE: TRADITIONS OF THE TOTALITARIAN PARADIGM AND NEW RESEARCH STRATEGIES**

The author analyzes traditions of Russian historical studies in France, which have essentially changed the rout of research into Russian history for the last thirty years. From the totalitarianism theories, by revising social history, historians even more often resort to methods related to updated "social history of political issues".

UDC 165.19:159.923.2

L.I. Ivankina, O.G. Beresteneva**ILLUSION OF SEPARATION OR UNITY OF TECHNICAL AND HUMANITARIAN COGNITION**

The contemporary type of scientific character overcomes the tradition of contrasting rational and irrational origins adjusting to matured traditions that address their unity. The contemporary approach is characterized by inter-subsidiarity consideration of cognition methods, organic merging of alphanumeric and vivid logical-rational and intuition-semantic moments of any cognitive activity. Recognition of material and ideal equality requires also recognition of equal rights of scientific and non-scientific methods, rejection of the traditional method of strong verbalization of any idea and the use of emotions in practical studies as well as overcoming the objective of technical and humanitarian knowledge separation that is especially relevant in educational field. Only the unity of these approaches can provide three-dimensional adequate vision of material and inner world of a man. Senses as well as feelings are in the context of the integrity of a man; their inter-penetration gives birth not only to an ordinary homo sapiens but also to an inspired one.

UDC 378.126.048.2(571.1/.5)

V.V. Petrik**RESEARCH AND EDUCATIONAL STAFF TRAINING IN POST-GRADUATE STUDY IN INSTITUTES OF SIBERIA. 1958–1991 (THE HISTORY OF THE ISSUE)**

This article is devoted to the issues of post-graduate education at Siberian Institutes. On the basis of archival documents both objective and subjective reasons for low work efficiency of the traditional form of scientific staff training at Institutes of this region in the end of the 50^s and at the beginning of the 90^s of the 20th century are analyzed.

UDC 624.131.1:539.16.002.68(571.16)(09)

A.A. Zubkov, A.A. Lukin, E.V. Gusev, E.V. Chernyaev**THE HISTORY OF ENGINEERING AND GEOLOGICAL GROUND PROVISION OF LIQUID RADIO-ACTIVE WASTES BURIAL OF SIBERIAN CHEMICAL INDUSTRIAL PLANT**

The history of engineering and geological preparation, building and exploitation of polygons for liquid radio-active wastes burial of Siberian Chemical Industrial Plant is considered in the paper. The area for liquid radio-active wastes burial was tested and proved to be optimal in the 90^s, of the 20th century.

UDC 378.146:51:681.3

V.P. Arefyev, A.A. Mikhalechuk, N.N. Kulebakina**COMPUTER STATISTICAL ANALYSIS OF THE COMPETITIVE EXAMINATION RESULTS AND RESULTS OF ENTRANCE CONTROL IN MATHEMATICS**

In this paper, we use special Excel and Statistical programs and compare the results of the competitive examinations in mathematics

at TPU and the results of the so called entrance examinations which are taken by the 1st year students and checked by the teachers during the first week of the term. We also compare the results of the test checked by the computer. The conclusion is made that the results of all types of the tests differ greatly. The reasons for such difference are discussed here. Computer chronological analysis and forecast of entrance examinations results are carried out.

UDC 796.011.3:378.037.1

V.F. Peshkov**DEVELOPING HUMANISTIC APPROACH TO THE MODERNIZATION PROBLEM OF PROFESSIONAL SPORTS EDUCATION AMONG STUDENTS OF PHYSICAL TRAINING FACULTY**

The reasons for formation of creative component of students' professional training are given. By involving students into research activity using the method of content analysis, it is possible to expand the limits of theoretical, professional and research experience and become aware of the potential of the humanistic component of professional education of PT teachers.

UDC 537.9:061.6

D.I. Vaisburd**TOMSK SCIENTIFIC SCHOOL OF DIELECTRIC RADIATION PHYSICS. PART 1**

The history of radiation physics of solid body and the history of origin and development of dielectric radiation physics of Tomsk school is described as part of the world science. Its founders were professor P.S. Tartakovsky and his disciple A.A. Vorobiev, the latter being the rector of Tomsk Polytechnic University for 26 years.

UDC 54.16:061.6

Yu.A. Zakharov, V.A. Nevostruev, S.M. Ryabykh, E.P. Surovov**RADIATION CHEMISTRY DEPARTMENT OF TOMSK POLYTECHNIC UNIVERSITY CONSIDERED TO BE THE PROGENITRESS OF KUZNETSK BASIN SCIENTIFIC SCHOOL "PHYSICS AND CHEMISTRY OF ENERGY SUBSTANCES"**

The article presents the information about Kuznetsk Basin scientific school "Physics and chemistry of energy substances" headed by the correspondent member of the Russian Academy of Science Yu.A. Zakharov. The department was established in 1958 on the basis of Radiation Chemistry Department of Tomsk Polytechnic University.

UDC 54(07)(09)+546(07)(09)

N.F. Stas**CHRONOLOGY OF TEACHING AND METHODOLOGICAL SYSTEM FORMATION OF GENERAL AND INORGANIC CHEMISTRY OF TOMSK POLYTECHNIC UNIVERSITY**

The paper states the main stages of educational and methodological system formation at the Department of General and Inorganic chemistry of Tomsk Polytechnic University for students of different program lines of technical multiple-discipline universities. Brief information about the department history, its foundation and development of educational and methodological system is given.